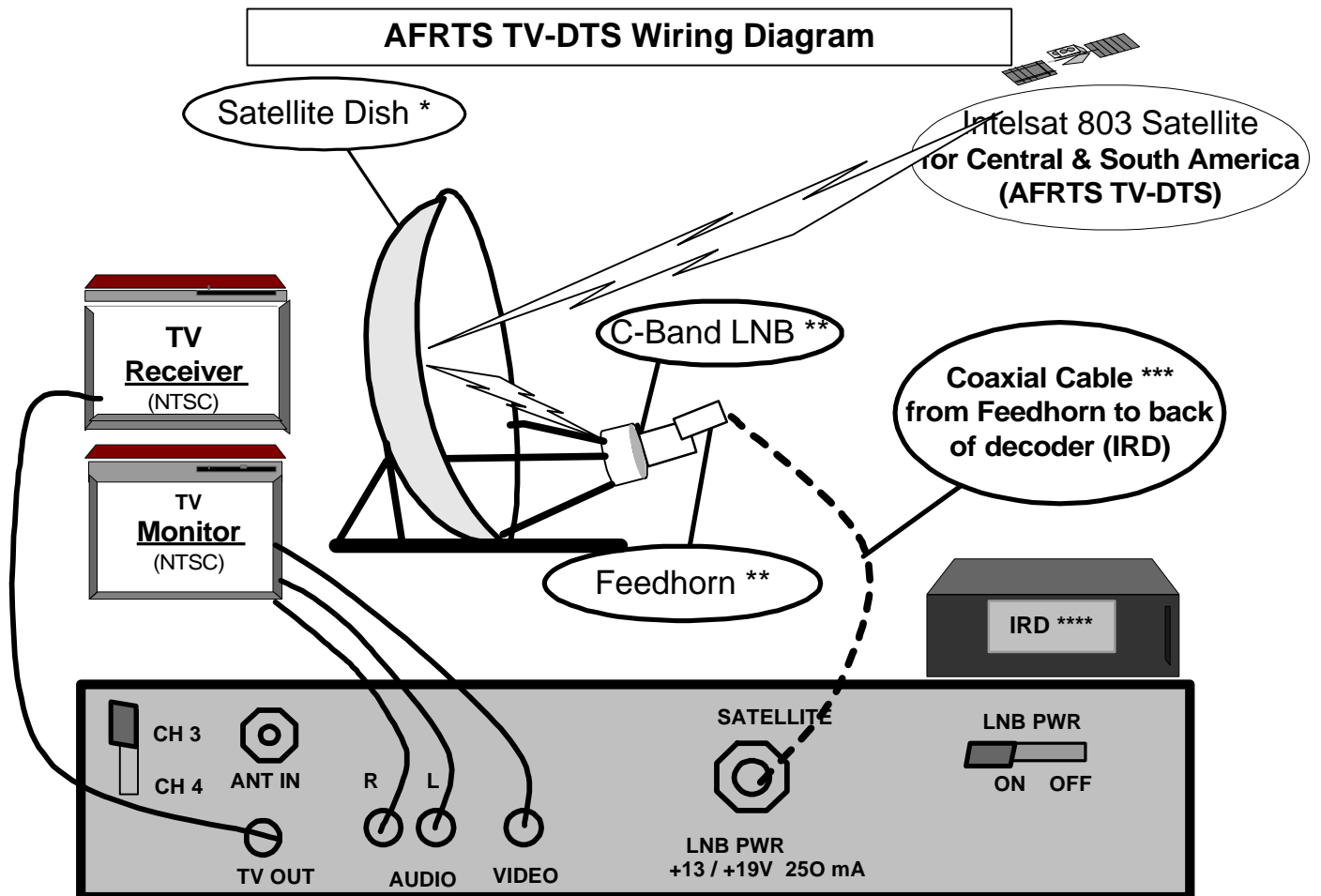




DECODER SETUP INSTRUCTIONS
For the Atlantic Ocean Region (AOR)
Including Central and South America
Scientific Atlanta PowerVu (Model 9234)
Integrated Receiver Decoder (IRD)



* **Dish (Antenna) Size** for AFRTS Direct to Ship (TV-DTS): 1.2 meter or larger

** **Low Noise Block Downconverter (LNB)**: digital ready LNB downconverter with a local oscillator stability of +/- 500 KHz to +/- 900 KHz and C-Band, Left Hand Circular Polarized (LHCP) Feedhorn

*** **Coaxial Cable from LNB**: Requires RG-6 or RG-11 coaxial cable. (Cost of satellite dish, LNB, feedhorn, and coaxial cable: about \$400)

**** **IRD**: The Armed Forces Radio and Television Service (AFRT) Integrated Receiver Decoder (IRD) (Model 9234) is manufactured by Scientific Atlanta. Manufacturer's price (\$526) is subject to change; shipping (about \$25) is extra. This IRD receives AFRTS TV and radio programming exclusively.

These are Setup Instructions for Scientific-Atlanta's **Business Satellite Receiver** (BSR) or Integrated **Receiver Decoder (IRD)**, **Model #9234** (hereafter, this decoder is referred to as an "**IRD**".)

These Setup Instructions are followed by three documents:

1. Operating Instructions for the Electronic Program Guide (EPG) (attached)
2. A Trouble Shooting Guide (attached)
3. Aiming Instructions Chart for major sites in Central and South America (a separate document)

SETUP INSTRUCTIONS

NOTE: It is important to follow these steps in this order.

1. Unpack the **IRD** from the shipping box and install either on a shelf, desktop or on top of TV receiver.
2. Using coaxial cable from the satellite dish's LNB, connect the L-Band RF output to the **IRD's** Satellite connection (See coaxial cable on page 1 wiring diagram)
3. Turn the LNB power switch located on the rear of the **IRD** to the **ON** position.
4. Connecting the IRD to the TV. This connection depends on whether your are using a TV **Receiver** or a TV **Monitor** (as depicted on page 1).

If you are using a **TV Receiver** (a TV **with the ability to change channels**):

Connect a coaxial cable from the **TV Out** connector on the rear of the IRD, to the **VHF In** on the TV. Select either TV channel 3 or 4 on the rear of the IRD and select that same channel on the TV.

or

If you are using a **TV Monitor** (a TV **without the ability to change channels**):

1. Connect a video cable from the **Video Out** connector on the rear of the IRD, to the **Video In** connector on the rear of the TV monitor.

2. Connect audio cables from the **L - R Audio Out** connectors on the rear of the IRD to the **L - R Audio In** connectors on the rear of the TV Monitor.

5. Use of a power surge or power spike protector is recommended.

WARNING!

Safeguard NOW against Power Surges or Spikes! If you are located in a country where the local electrical current is subject to frequent power surges or power spikes, you should protect this IRD and other electronic equipment by installing a SURGE PROTECTOR between the power source (wall socket) and the IRD (decoder).

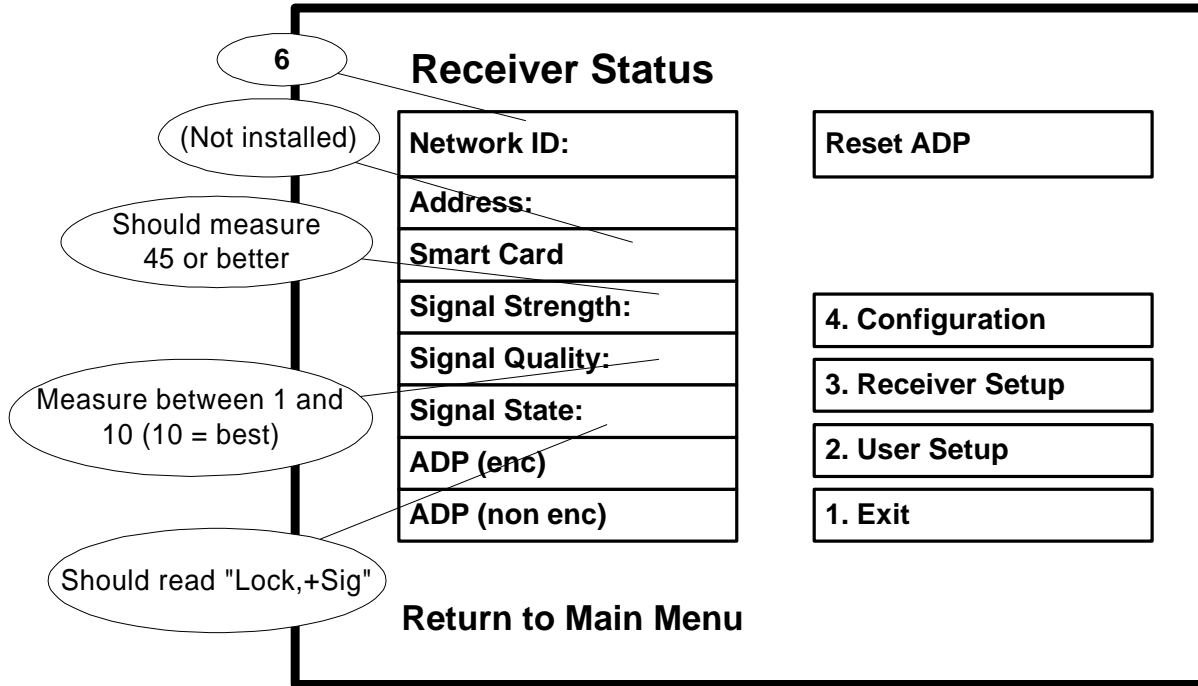
6. Connect the **IRD** to a power source (using power surge protector if necessary). Push the **on/standby** switch, to turn the **IRD** on. This on/standby switch is located on the front of the IRD. (It is not illustrated on page 1.)
7. Using the remote control, display the **BSR MAIN MENU** by pressing the Menu button. See Table 1 for example of TV screen.

Table 1 (TV Screen)

BSR Main Menu	
	5. EPG
	4. Available Services
	3. Dish Pointing
	2. Receiver Status
	1. Exit
Return to Current Program	

8. Display the **RECEIVER STATUS** by pressing **2** and then press **SELECT**, or move to Receiver Status using the scroll arrows on the remote control and press **SELECT**. See Table 3 for example of TV screen.

Table 2 (TV Screen)



8.a. Your Signal **Strength** is discussed later. Ignore any reading you get on the Signal Strength at this point because any reading you get in the Signal Strength block would be premature. It will only be accurate once your antenna is properly aimed at the satellite so ignore it until the antenna is properly aimed.

8.b. Your Signal **Quality** is also premature until your antenna is properly aimed at the satellite. You will know you have aimed your antenna accurately when the term, "**Lock, + Sig**" appears in the Signal **State** block on the Receiver Status menu screen (see Table 3).

9. Scroll to "**2. User Setup**" and press **SELECT** to enter the **User Setup Menu (Table 3)**.

9.a. Scroll to TV Audio and change selection to LEFT. See Table 3 for example of TV screen.

Table 3 (TV Screen)

The diagram shows a TV screen with the title "User Setup". It is divided into two columns of settings. On the left, there are two rows of settings, each with a "0" in a circle to its left. Below these are three more rows of settings, each with a "(Do not adjust)" callout. At the bottom left, there is a callout that says "(Refer to How to Set Clock Info below)". On the right, there are four rows of settings, each with a callout: "Auto", "(Do not adjust)", "(Do not adjust)", and "(Do not adjust)". Below these are three more rows of settings, each with a callout: "(Do not adjust)", "Off", and "Off". At the bottom right, there is a callout that says "Return to Receiver Status Menu".

User Setup	
Date Format:	Video Standard:
Lock Level:	Subtitles Lang: Disabled
Bouquet ID:	Set Password:
TV Audio:	Factory Reset:
Baud Rate:	IR Remote: Enabled
Aspect Ratio:	3. Network Presets
Local Time:	2. Display Setup
	1. Exit

Return to Receiver Status Menu

9.b. Scroll to Exit and select Exit to return to the **Receiver Status (Table 2)** menu.

9.c. Scroll to Receiver Setup and press SELECT to move to **Receiver Setup** menu (**Table 4**).

9.d. Display the **Receiver Setup** (shown below) by pressing **3** and then press **SELECT**, or move to **Receiver Setup** using the scroll arrows on the remote control and press **SELECT**. See Table 4 for example of TV screen.

Table 4 (TV Screen)

The diagram shows a TV screen displaying the 'Receiver Setup' menu. At the top right, the date and time 'Sun 04/11/99 06:20 AM' are shown. The menu is divided into two columns. The left column contains: 'Freq Mode:' (with a callout 'L-Band / #1'), 'Frequency:' (with a callout '1008.00'), 'L.O. Freq #1' (with a callout '5.150'), 'L.O. Freq #2', 'Crossover: N/A' (with a callout 'Not applicable'), 'Polarization:' (with a callout 'Not applicable'), 'FEC:' (with a callout 'H-(fix)'), and 'Symbol Rate:' (with a callout '2/3'). The right column contains: 'Network ID:' (with a callout '6'), 'AFC Level:' (with a callout '00' and a note 'Should measure 45 or better'), 'Signal Strength:', 'Signal Quality:' (with a note 'Measure between 1 and 10 (10 = best)'), 'Signal State:' (with a note 'Should read "Lock,+Sig"'), 'Find:', 'Search Setup', and '1. Exit' (with a callout 'Off'). At the bottom, there is a 'Return to Receiver Status Menu' option with a callout '3.6800'.

10. Once in the **RECEIVER SETUP** menu (as shown in Table 4), scroll to the **Freq Mode** block and set to **L-Band/#1** using the **SELECT** button.

11. Scroll to the **Frequency** block, push the **SELECT** button to clear the entry, enter the correct frequency (for Central and South America, your Frequency is 1008.00). Push the **SELECT** button to store (save) the **Frequency** block setting.

12. Scroll to **Polarization**, push the **SELECT** button to clear the entry, enter H (fix). **Do not push the SELECT button at this time.**

13. Scroll to the **L.O. Freq # 1** Block, push the **SELECT** button to clear the entry, enter the appropriate L.O. Freq (for Central and South America using a 1.2 meter dish, the L.O. Freq # is 5.150).

14. Scroll to **FEC Rate** block, push the **SELECT** button to enter appropriate FEC Rate for your satellite region (for Central and South America, the FEC Rate is 2/3). **Do not push SELECT button at this time.**

15. Scroll to the **Symbol Rate** block, push **SELECT** button to clear the entry, enter the appropriate Symbol Rate for your satellite region (for Central and South America the Symbol Rate is 3.6800 MSIs). Push the **SELECT** button to store (save) the setting.

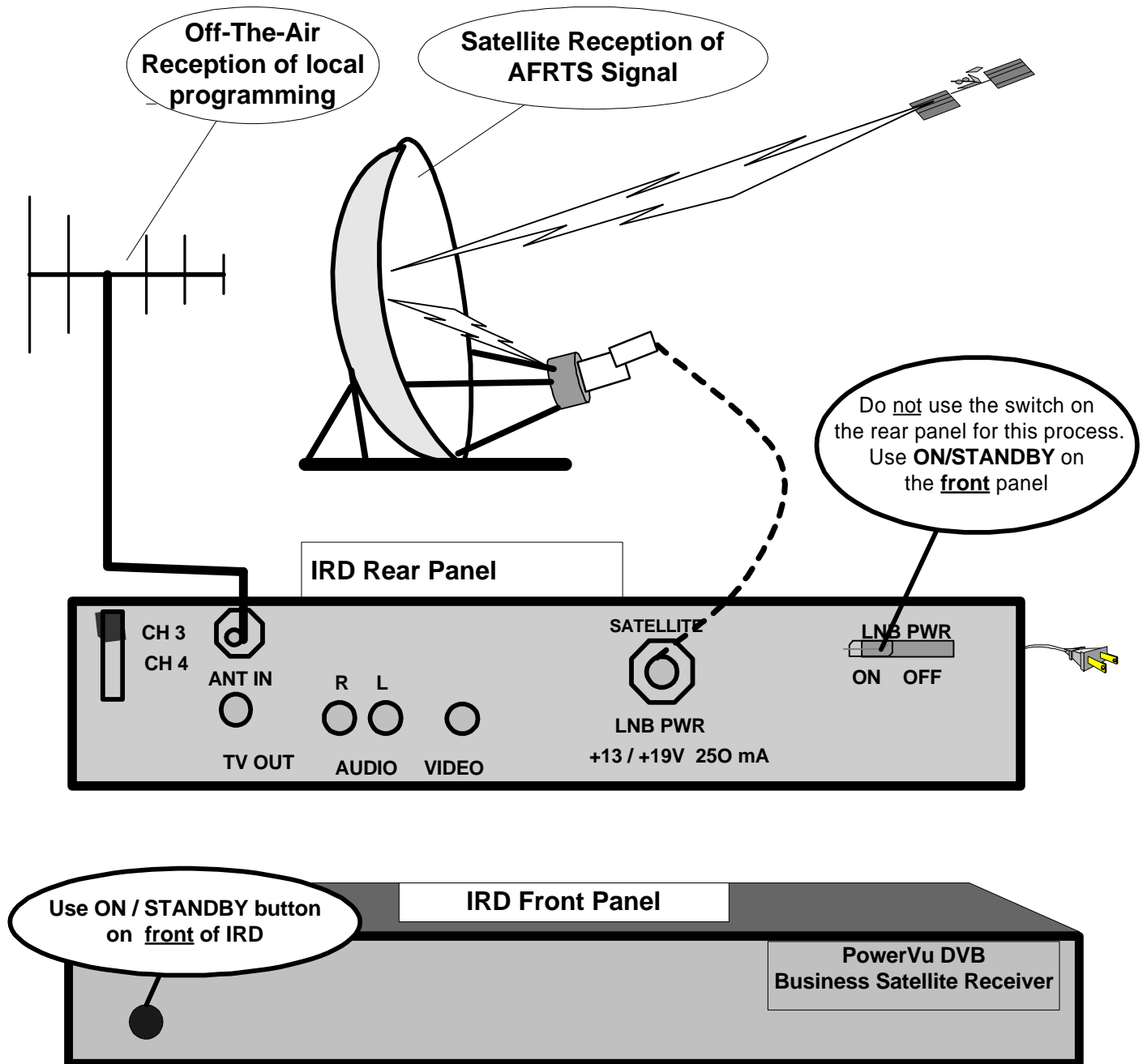
16. Scroll to the **Network ID** block, push the **SELECT** button to clear the entry, enter the appropriate Network ID for your satellite region (for Central and South America the Network ID is 6). Push the **SELECT** button to store (save) the setting.

17. Scroll to the **Exit** block and push the **SELECT** button. (A yes/no box to store [save] settings will appear.) Push **1** to store (save) the settings. This will return you to the **Receiver Status** menu (Table 2). Scroll to the **Exit** block on this menu and push the **SELECT** button. This will return you to the **BSR MAIN MENU** (Table 1). Scroll to **Exit** and push the **SELECT** button. This will return you to normal viewing.

18. Virtual channels can be selected using the remote control or the channel up/down switch located on the front of the **IRD**. Enter a channel number, e.g., 01 and push **SELECT** from the remote. Then press the standby switch once. If your system requires a software upgrade, it will begin automatically. Allow the system to totally download the updated software. **(Download procedure could take up to 30 minutes)** Once the download is complete, the IRD will return to normal operation on the last channel that was selected prior to beginning the download

19. Local off-the-air reception (used to receive local TV programming via a conventional antenna) is available through the **IRD**. Refer to Diagram below entitled "HYBRID SATELLITE AND OFF-THE-AIR RECEPTION SYSTEM" for connecting for off-the-air reception.

Hybrid Satellite and On-The-Air Reception System



When the IRD is turned on, it switches to the Satellite reception of AFRTS signals (from the dish). When it is turned off, the IRD switches to the Off-The-Air reception of local programming (from the local antenna).

20. The remote control must have unobstructed line-of-sight to the **IRD** for proper operation.

21. The following is the PowerVu setup information for the Central and South America Regions served by AFRTS TV-DTS.

Band: C/L-Band Freq.
L/C Band Freq.: 1008.00 (Mhz)
FEC Rate: 2/3
Symbol Rate: 3.6800 (MSIs)
Network ID: 6
C Band LO: 5.150 (Ghz)

22. Your Signal State should indicate you to have **Lock,+Sig**. **Lock, +Sig** means your antenna is aimed, or “locked” onto the specific satellite which carries the AFRTS Signal. (For Central and South America, this is Intelsat 803.)

22.a. If you do not have “**Lock,+Sig**”, refer to the Troubleshooting Guide below.

Signal State is the most important setting. You must have the Lock,+Sig reading before you can get a Signal Quality.

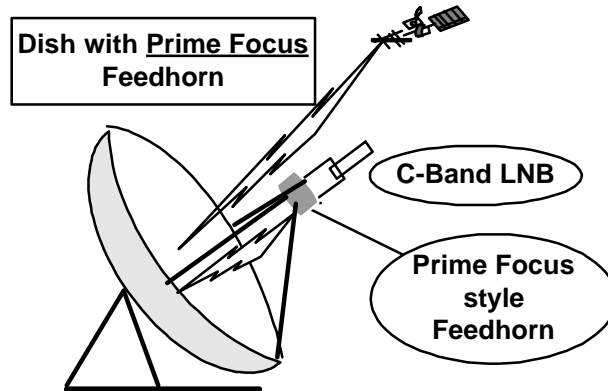
22.b. After you get **Lock + Sig**, then you should optimize your signal by moving your antenna very slightly back and forth (for the Azimuth [left and right] and then for Elevation [up and down]) until your Signal Quality peaks at the highest number.

23. Attached to these Decoder Setup Instructions are the following items:

- An Electronic Program Guide (EPG) Setup Instructions
- A Troubleshooting Guide
- A Satellite Antenna or Dish Aiming Information Table (separate document). Titled, **Aiming Information for Central and South America**, this table lists major Central and South American cities, each city’s latitude, longitude, azimuth and elevation for aiming a satellite antenna at the correct satellite (Intelsat 803) which carries the AFRTS TV-Direct to Ships (TV-DTS) satellite signal.

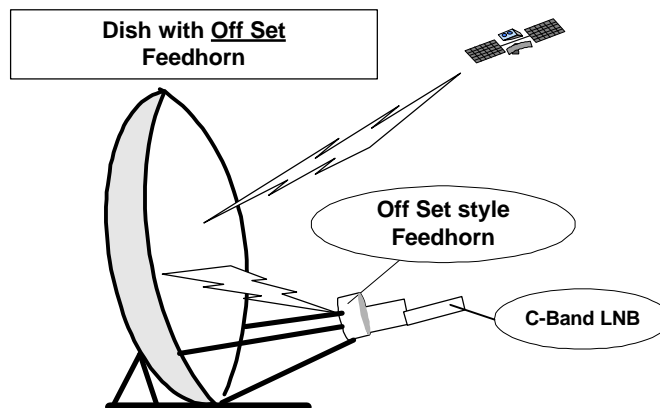
Aiming the Satellite Dish

24. Determine which type of dish (antenna) you are using: one with a Prime Focus Feedhorn or an Offset Feedhorn (see diagrams below).



24.a. For satellite dishes (antennas) with a **Prime Focus style Feedhorn** (located in the center of the dish), start setting the Elevation slightly lower (about 5 degrees) than the Elevation angle that is listed on the Aiming Information Chart.

24.b. For example, if the Aiming Chart says your city's Elevation should be 25 degrees, start aiming your dish's Elevation at 20 degrees and keep adjusting up toward the 25 degree setting. Keep adjusting, and checking the Receiver Setup screen on your TV until the Signal Strength and Signal Quality readings are best. Then, mark these final settings on the base of your dish (use these marks as your reference points if it gets bumped).



24.c. Satellite dishes (antennas) with an Off Set style Feedhorn have the feedhorn extending from the lower part of the dish. If you have a dish made by Prodelin or Channel Master (which are brands used by AFRTS) you have an Off Set Feedhorn and you may need to adjust as follows:

24.d. When aiming the Elevation on most dishes with Off Set Feedhorn, look at the Aiming Information Chart's Elevation Level for your city or location. Subtract 20 degrees from the Elevation listed there. For example, if the Aiming Information Chart says your Elevation should be 25 degrees, subtract the 20 degrees and start the aiming process at 5 degrees of Elevation. Keep adjusting, and checking the Receiver Setup screen on your TV until the Signal Strength and Signal Quality are best. Then, mark these final settings on the base of your dish (use these marks as your reference points if it gets bumped).

25. To start aiming your dish you will need to know your location's Aiming Coordinates.

25.a. The attached chart titled **AIMING INFORMATION** has the longitudes, latitudes, and responding azimuths and elevations for your area of the world.

25.b. Use this listing for your location as a start off point when aiming your dish (antenna).

25.c. Please note: the Elevations listed on the Aiming information chart are for dishes (antennas) with Prime Focus feed horns. If you have a dish with an Off Set Feedhorn, remember to change the readings as shown in Off Set Feedhorn diagram above.

26. Mark the antenna's existing position settings. The best way to optimize your antenna is to make a mark on the antenna's base to remember the current settings as reference points before you start to adjust it. Later on, when you have completed the setup procedure and have the best possible settings, mark those settings on the antenna base. These final marks may come in handy if the dish is bumped off the signal.

27. **Start with Azimuth** (using a compass, turning the dish sideways left or right)) and **then adjust the Elevation** setting (using a protractor, moving the dish up or down).

28. To adjust the antenna's elevation, start at the lowest setting recommended, taking into consideration whether you are using a dish with a Centered feedhorn or an Offset feedhorn. Then, move it very slightly one way (up or down, back or forth), **wait a minute**, check your TV screen to see if Signal Quality has improved. Keep adjusting until you have peaked the system to the best possible signal.

29. Keep adjusting the Elevation (protractor setting) and the Azimuth (compass setting) until your Signal Quality gets closest to 10. (Remember, 10 is the best Signal Quality).

30. When you have the best signal, mark those setting on the base of the antenna (dish) for future reference and to save you time re-aligning your dish if it is inadvertently moved or bumped.

31. Set the Electronic Program Guide (EPG) and the internal clock as instructed below.

ELECTRONIC PROGRAM GUIDE (EPG) SET UP AND OPERATING INSTRUCTIONS

The following instructions will enable you to receive the **Electronic Program Guide** (also called an “**EPG**”) on your IRD and display the program schedule for your local time on it. In order for the IRD to receive Electronic Program Guide Services, it MUST undergo a software upgrade. The procedure is easy and takes about 30 minutes the first time or about 5 minutes for a reset procedure. Follow these four steps:

Step 1. Press the ON/STANDBY button on the front of the **IRD**. The software upgrade will start automatically and take about **10 minutes**. Wait until the video returns, then...

Step 2. Tune the **IRD** back to any regular AFRTS program channel.

Step 3. Press the Viewing Guide button on the Remote Control in order to view the Electronic Program Guide (EPG). You are now finished setting the EPG. However, in order to set up the program schedule/guide to your local time, follow these instructions:

Table 5 (TV Screen)

Sun 04/11/99 06:20 AM				
EPG Menu				
Exit	9:30 PM	10:00 PM	10:30 PM	11:00 PM
301	MSNBC Time and Again		CNN Headlines	CNN Burden of
302	Intimate Portrait		X-Files	

How to set the **Internal Clock** on your **IRD**:

- Step 1.** Go into the Menu and select # 2 - Receiver Status.
- Step 2.** Select # 2 - User Status.
- Step 3.** Use the arrow keys to move to “Local Time” and Press **Select**.
- Step 4.** Using the up and down arrow keys, change the time to reflect the correct time in your local area. (Note that the time moves in 30-minute increments.) When the correct local time is displayed, then Press Select to store or save it.
- Step 5.** Exit the Menu Screens and then Press **Guide** on the remote control. The local time will then be displayed. It will automatically advance each half hour.

If you experience problems, or have questions about the operation of the Electronic Program Guide (EPG), please call the AFRTS Broadcast Center, March Air Reserve Base, CA, USA. Customer Support Line is (commercial): (909) 413-2339 (Press 2).

Availability

Information about the AFRTS-Broadcast Center (AFRTS-BC) is available on the AFRTS BC web site which is (<http://www.afrts.osd.mil/>).

Future updates to this instruction will be placed on the AFRTS-BC web site, located in the Direct to Sailors (DTS) section and titled DTS Setup Instructions.

Troubleshooting Guide

PROBLEM: My satellite Integrated Receiver Decoder (IRD) (black set-top box) will not turn on.

(1) Check to see if the receiver is plugged into the surge protector and/or the wall jack.

(2) Try plugging the receiver and surge protector into a different electrical outlet.

- Be sure you're not plugged into a "switched" outlet controlled with a light switch.

(3) Plug your TV into the same surge protector and outlet and see if it will power on.

(4) Make sure the problem is not with the receiver. Turn on the receiver both from the front panel and with the remote.

(5) Check the fuse box circuit breaker.

PROBLEM: I cannot set the Receiver (IRD) to the On-Screen Menu

(1) Check to see if your TV is tuned to the correct channel (Either 3 or 4) and select the same on the back of the receiver.

(2) Check to see if you are using the correct connections from the IRD (decoder) to the TV. Are you using the RF (To TV) connection and connected to the "from antenna on the TV"? Are you connected to the Video output from the receiver, to the video input on the TV/Monitor?

(3) If you are using the RF connection from the receiver to the TV, tune to channel 3 or 4.

(4) Turn the receiver on from the remote or the front panel.

(5) In the Receiver setup menu select NTSC.

PROBLEM: I cannot pick up the satellite signal

(1) Check that all connections from antenna, receiver, and TV are correct.

(2) Make sure there are no obstructions blocking the antenna's view to the satellite.

- Always stand behind the antenna, not in front of it while checking.

(3) Check that the antenna is set to the correct polarity, for example, Horizontal, Vertical, Left hand circular or Right Hand Circular.

(4) Check the antenna azimuth and elevation settings, if wrong see "Antenna Pointing".

(5) Tune the receiver to the "Receiver Setup Menu" on the 9234.

-If the signal indicator reads **No + Lock**, check the following for your location and service (The following settings are for Atlantic AOR for Central and South America using Direct to Ship DTS.)

- a. Network ID: (6)
- b. FEC Rate: (2/3)
- c. Frequency: (1008.00 Mhz)
- d. Band: C
- e. L.O.: 5.150 (Ghz)
- f. Symbol Rate: 3.6800 (MSIs)
- g. Video Standard is (NTSC)
- h. Polarization: H-Fixed

(7) If the signal indicator in the "Receiver Menu" reads "**No Signal**" check the cable from the antenna to the Receiver.

PROBLEM: I was receiving the satellite signal, but it comes and goes, or I get a lot of "freeze frames" and "digital artifacts."

This is the sign of a weak signal and can usually be traced to one of the following problems:

(1) Poor connection from the Antenna to the Receiver.

- Play with the connections to see if you can get the signal to intermit from Loss of Signal to Freeze-Frames. If so, redo or replace connectors.

(2) Antenna is not peaked or is too small.

(3) LNB does not meet specifications

- (4) Poor quality cable or connectors in use or impedance mismatch.
- (5) Signal level input to the IRD is too high; optimum input is -42 dBm.
- (6) Antenna is not stable; wind moves or shakes the antenna excessively.
- (7) Terrestrial Interference

Problem: I have “Lock,+Sig” but it says it is “not authorized.”

The IRD must be registered with the Headquarters, Armed Forces Radio and Television Service (HQ AFRTS) by the organization responsible for the IRDs. This includes providing HQ AFRTS with each IRD's Tracking Identification Number or “TID.” The organization's project person can call or fax the information to HQ AFRTS to have it activated to receive the satellite signal. Authorizations usually take less than 24 hours.

Remote Control Problems

The remote control will not turn the IRD On or Off.

- . (1) Check batteries, replace if necessary.
- . (2) Is the TV tuned to the correct channel (3 or 4)?
- . (3) Are you using audio and video from the Receiver to the TV? If so, is your TV/Monitor set appropriately “line or video”?
- . (4) Is there anything blocking the signal getting to the receiver from the remote. Remotes use infrared and will not work if they are blocked by any object.

The IRD can be programmed without using the remote control. Use the keys (buttons) on the front of the IRD.

Receiver (IRD) Problems

Receiver does not accept input on the front panel.

Check to see if IRD is set to Loc level 3 or Loc 4. If so, then reset it to **Lock Level 0**, if necessary.